

W. M. Keck Observatory Status and Plans

2019 Subaru Users Meeting

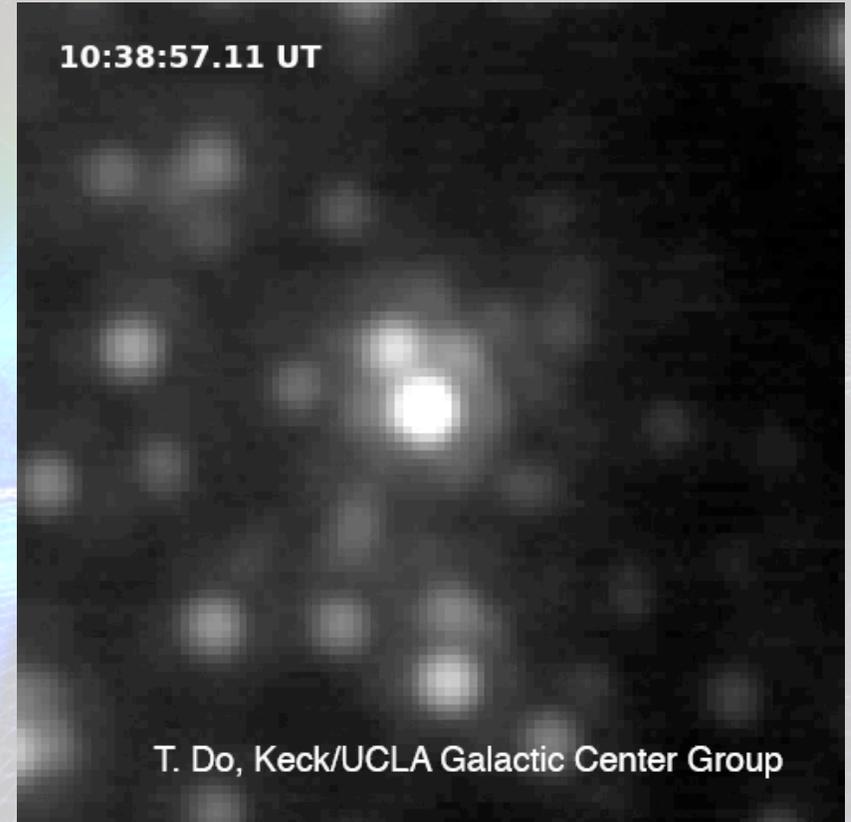
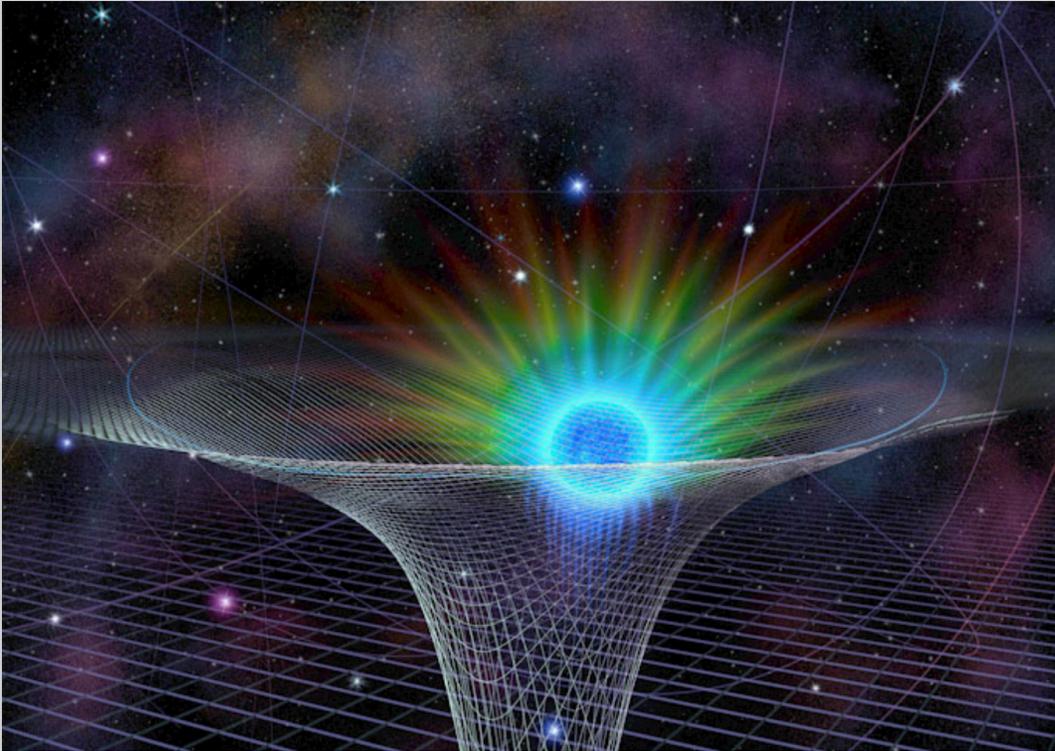
NOVEMBER 17, 2019

Hilton Lewis

Director, W. M. Keck Observatory



“Einstein’s Right, at least for now”



HR 5183b: 45-100 year period, $3M_{\text{Jup}}$



The Thing That Went Beep In The Night: FRB180924

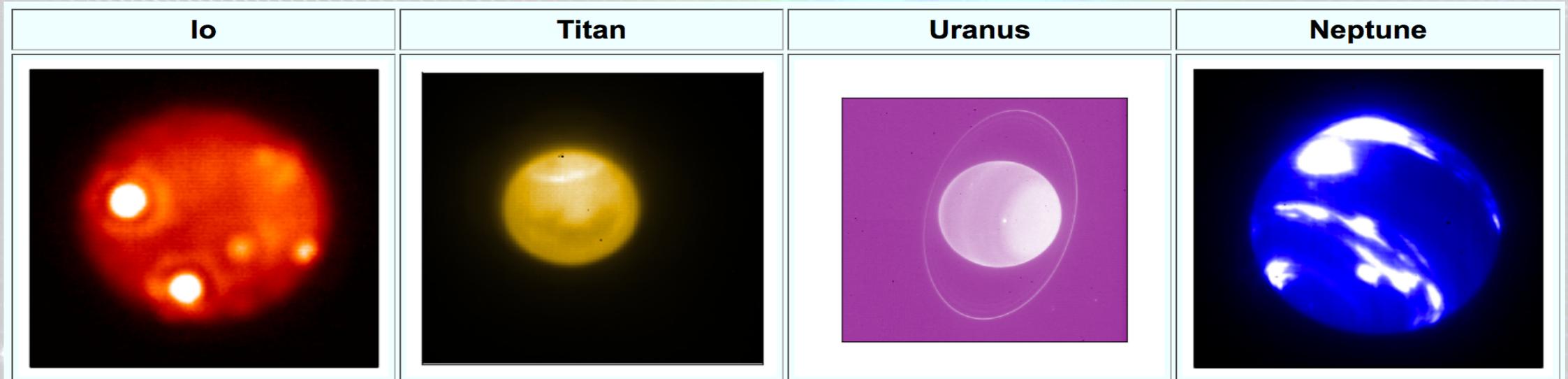
First non-repeating FRB to be localized



Morning Twilight Program In Place

(TAC approved)

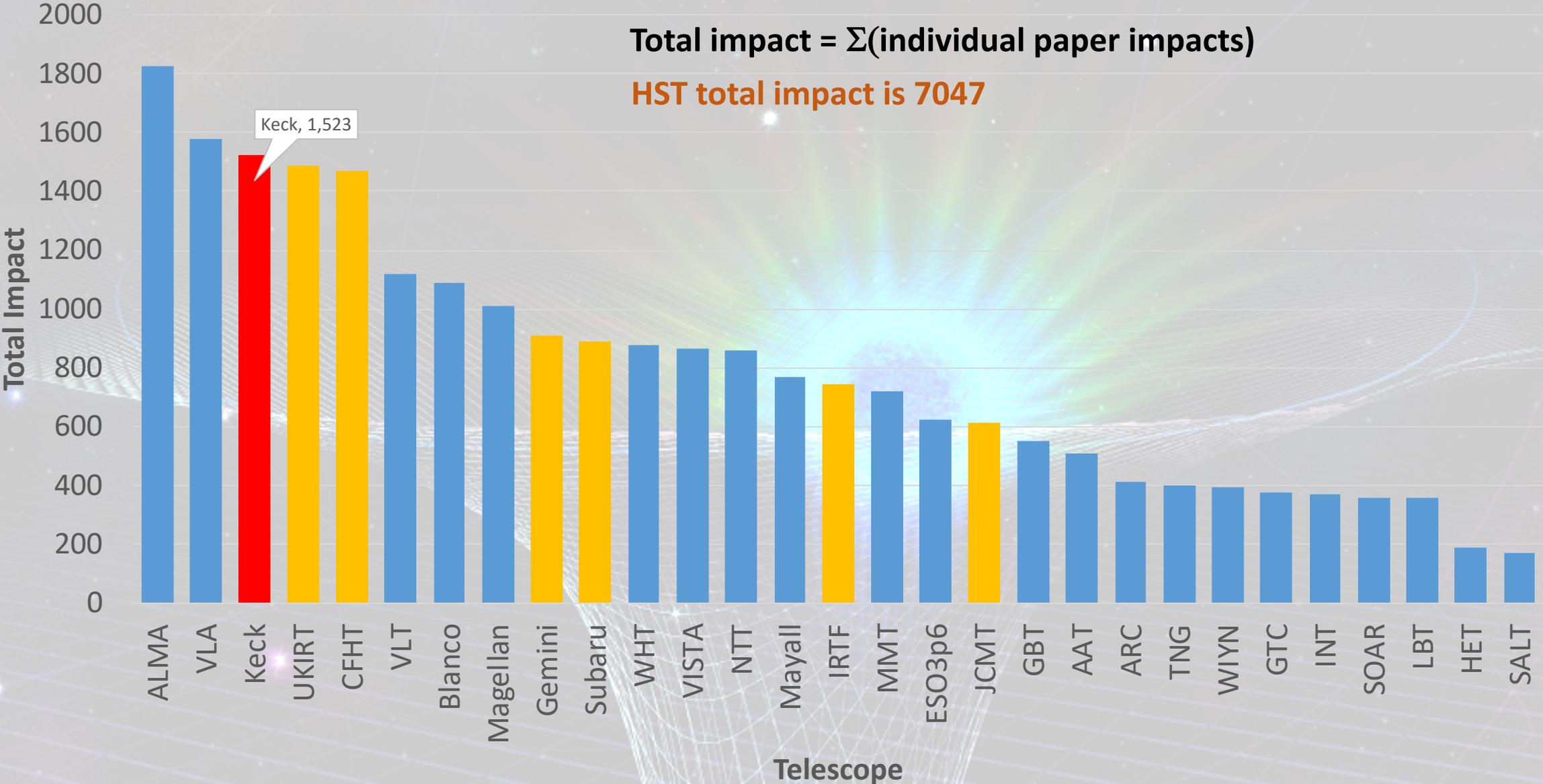
- Keck II, NIRC-NGS
- Keck I OSIRIS Imager – NGS program under development for both programs



Total Impact per Telescope 2013-2017

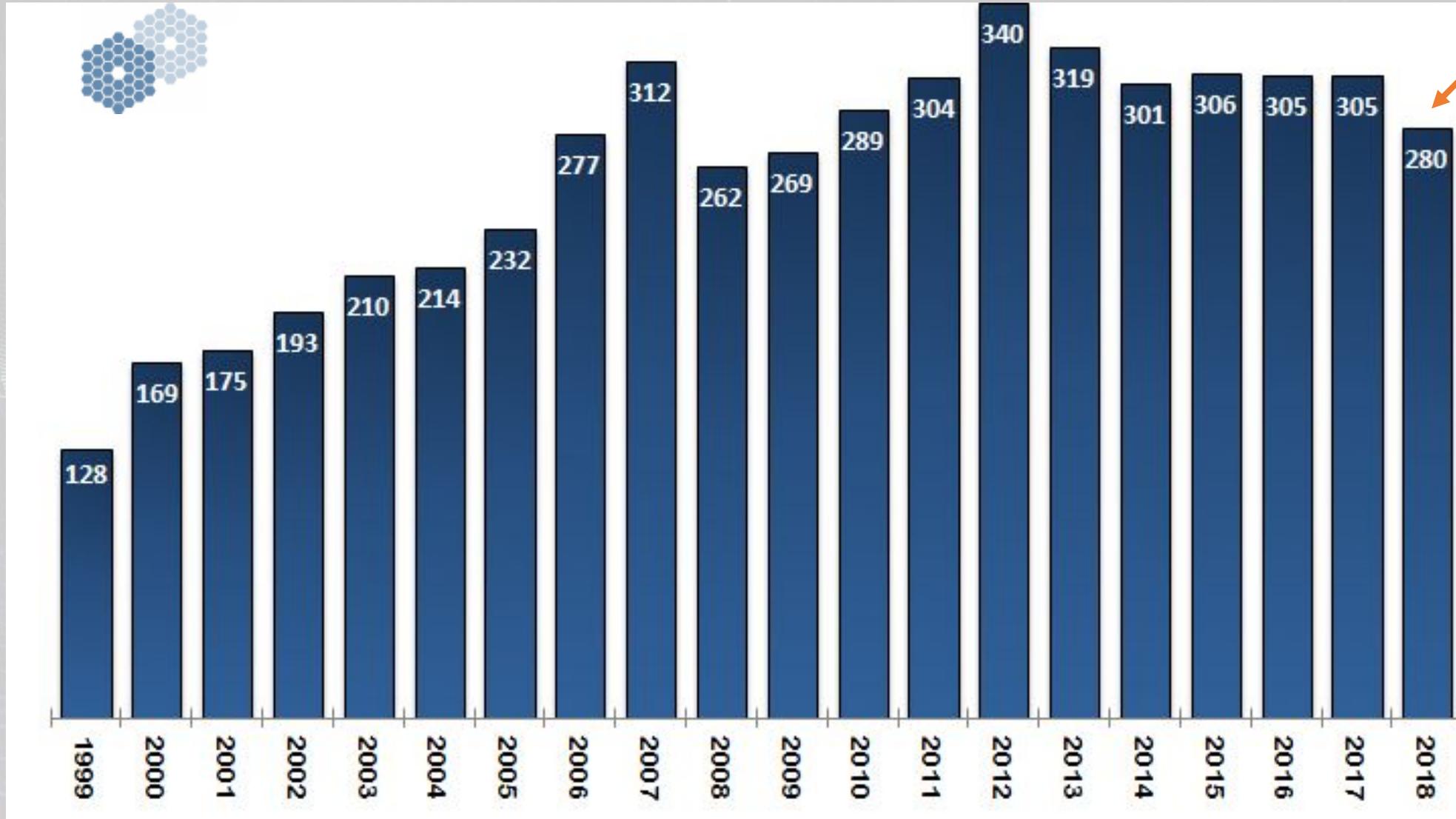
Total impact = Σ (individual paper impacts)

HST total impact is 7047

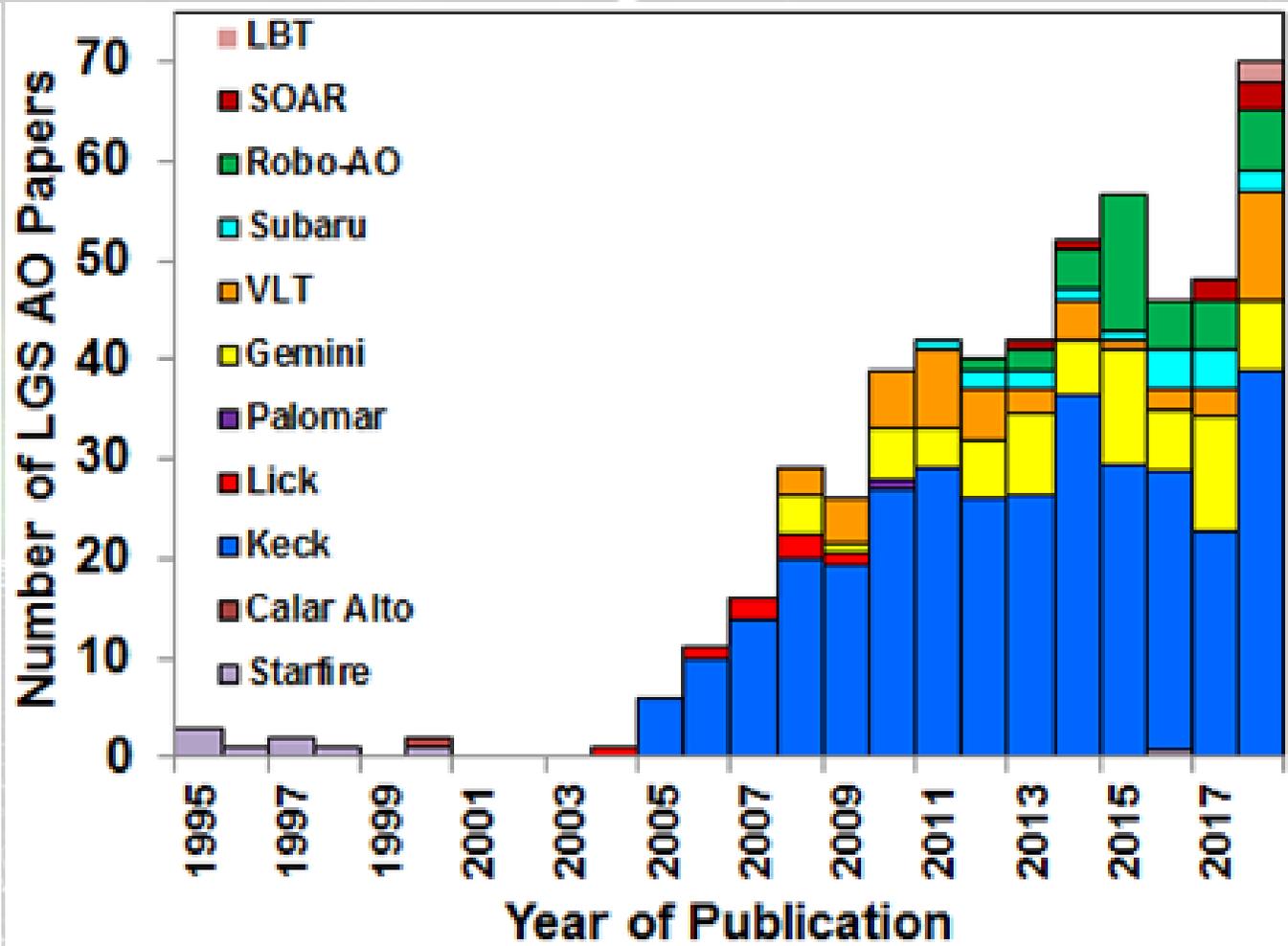
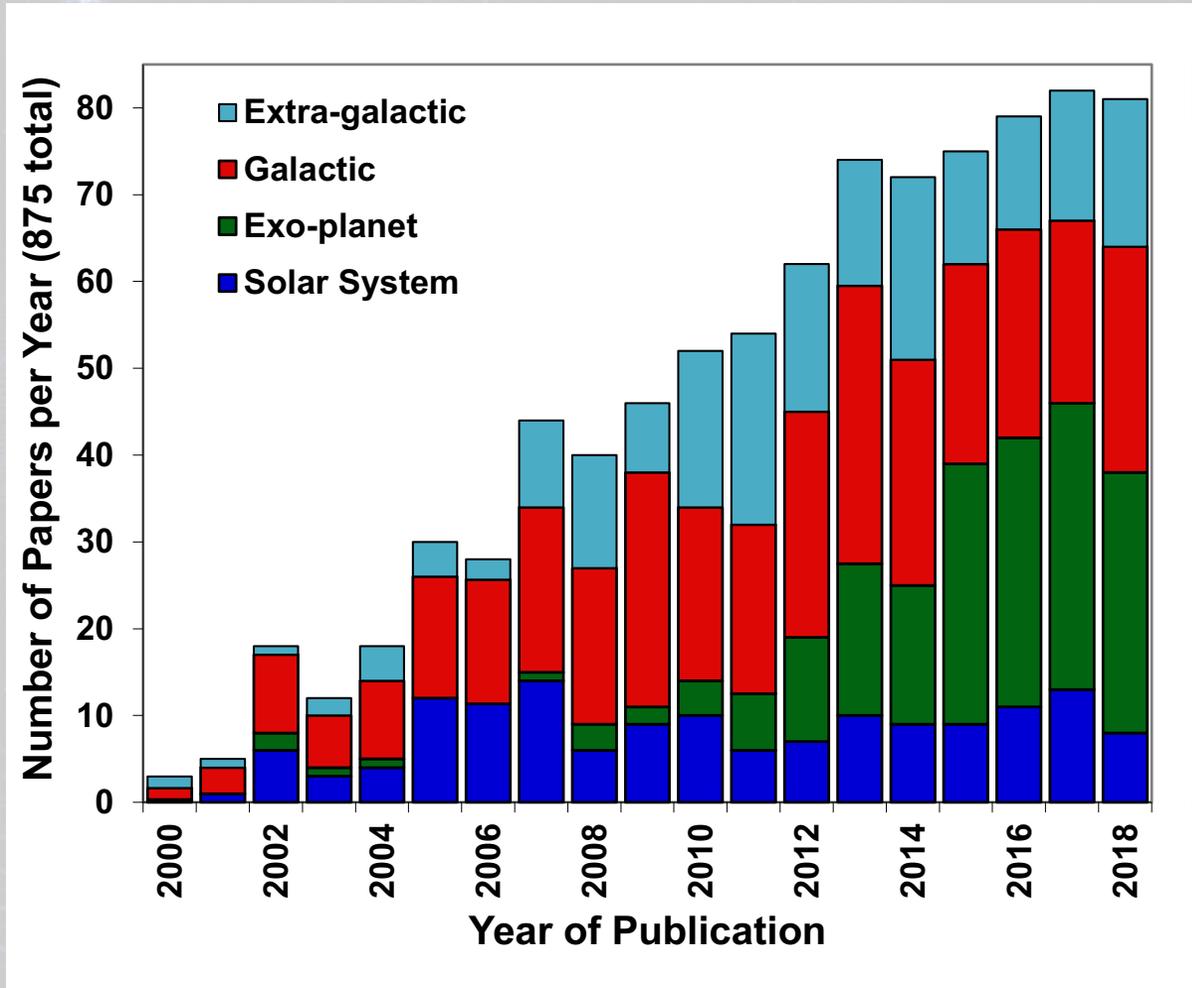


Refereed papers using WMKO data

36%
Weather
Loss 2018

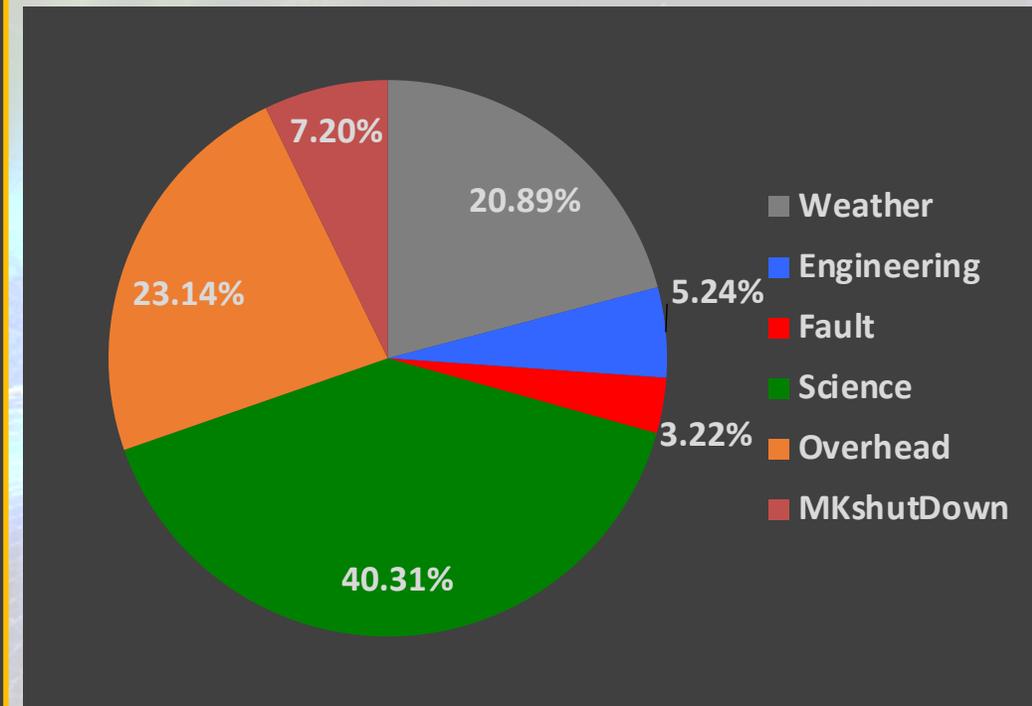
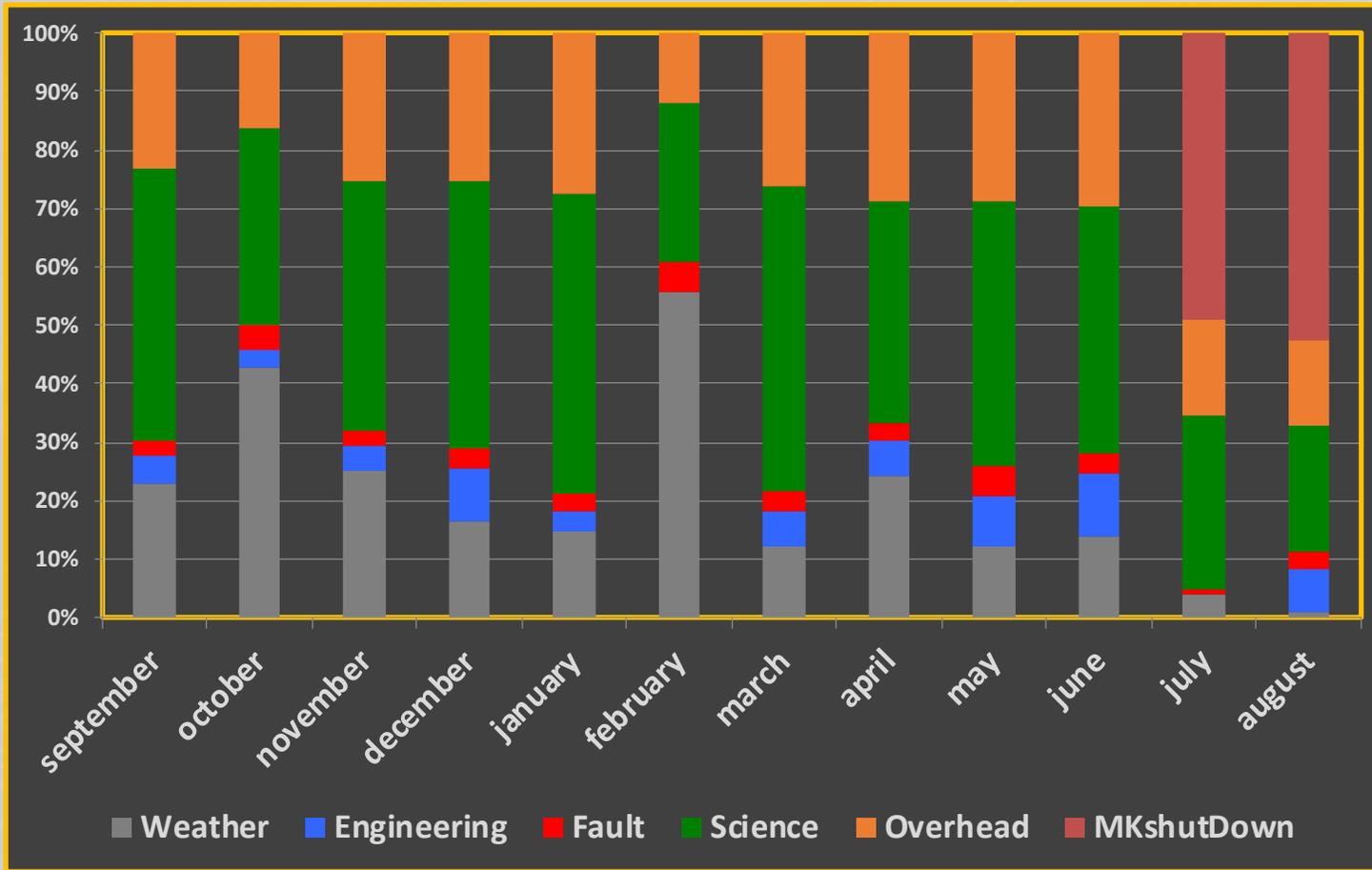


AO Productivity



Observing Statistics

Sep 2018 – Aug 2019



Unattended Night Operation (UNO)

Objective

- Allow telescopes to be operated SAFELY and RELIABLY without people on the summit at night

Key Benefits

- Significant cost savings (lower staffing, accommodation, transport, acclimatization)
- Improved reliability, resulting in additional science time (~4 nights/year)
- Improved predictive maintenance and night-time fault recovery capabilities
- Autonomous facility protection for safe operations
- Improved K2 shutter reliability plus windscreen mode, similar to K1

Staff Benefits

- Improved safety/health of night-time staff (because based in Waimea)
- Better situational awareness for support staff

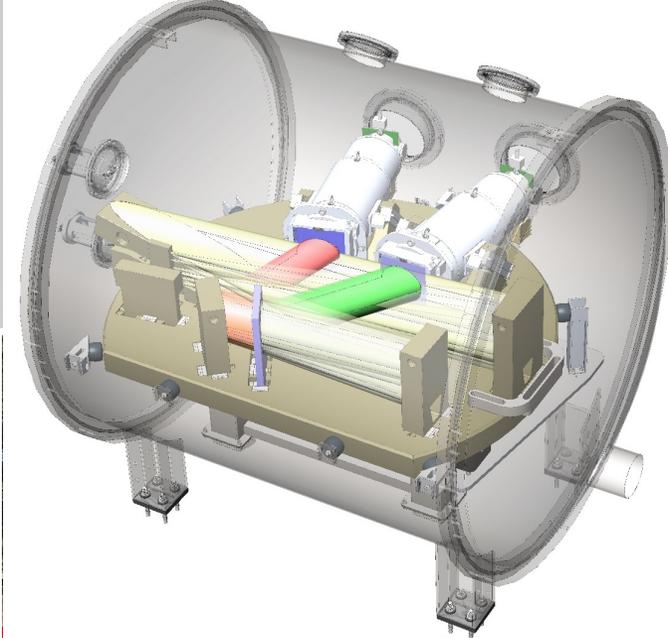
Segment Repair Project

- 73 / 84 segments repaired (87%)
- 65 repaired segments in telescopes
 - Keck 1 fully populated
- No major issues encountered in repair.
- Repaired segments inspected; no degradation noted.
- Completion expected by early- to mid- April 2020



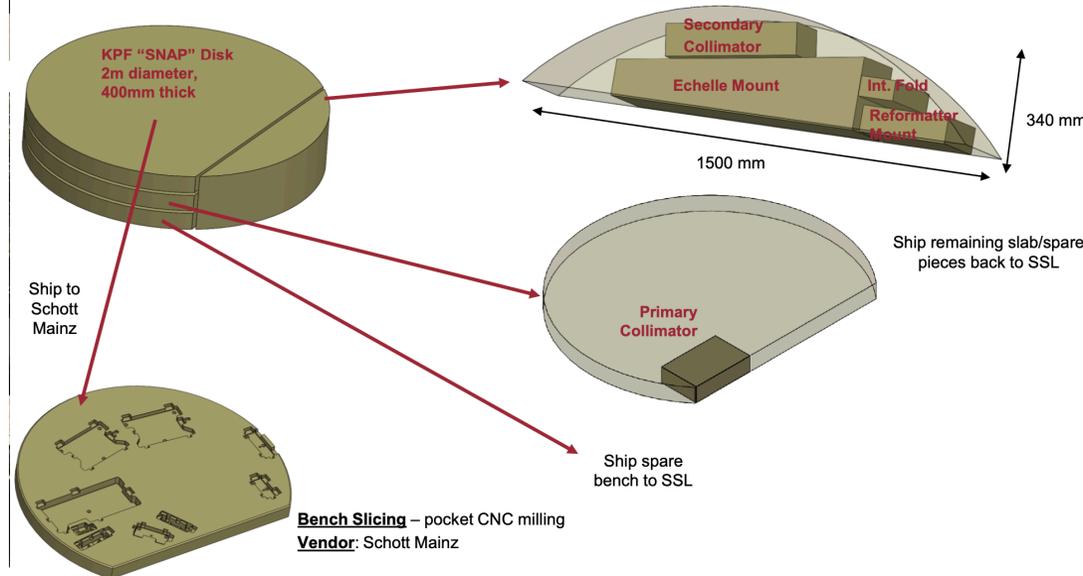
Keck Planet Finder: Preparing the Zerodur Disk

- Manufacturing Readiness Review held for Zerodur Optical bench in October
- Sending Bench to Corning for slicing and then to Schott for milling

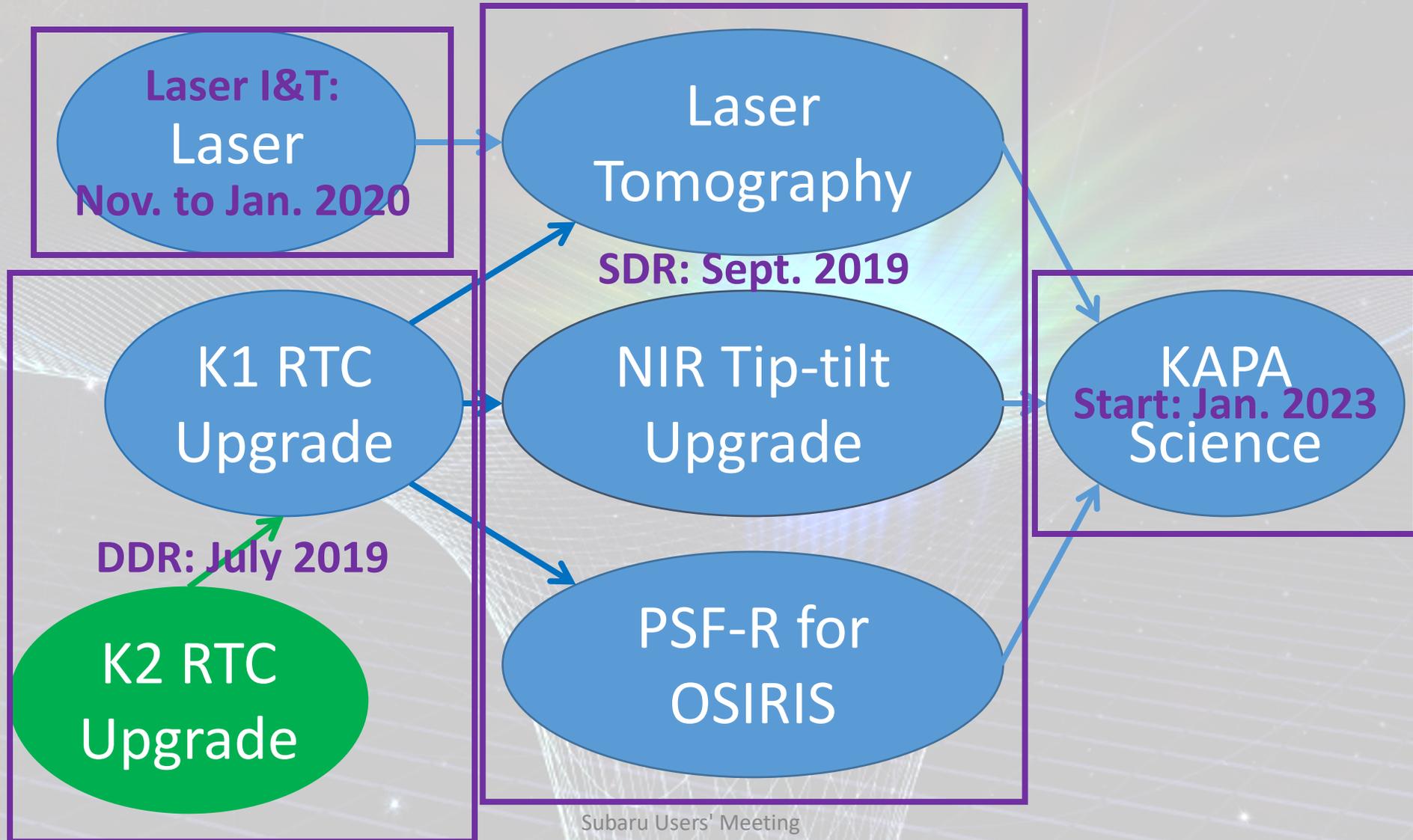


Bench Slicing – 3 rough cuts
step 1: D-cut slicing
step 2: bench slab slicing (x2)
Vendor: Corning

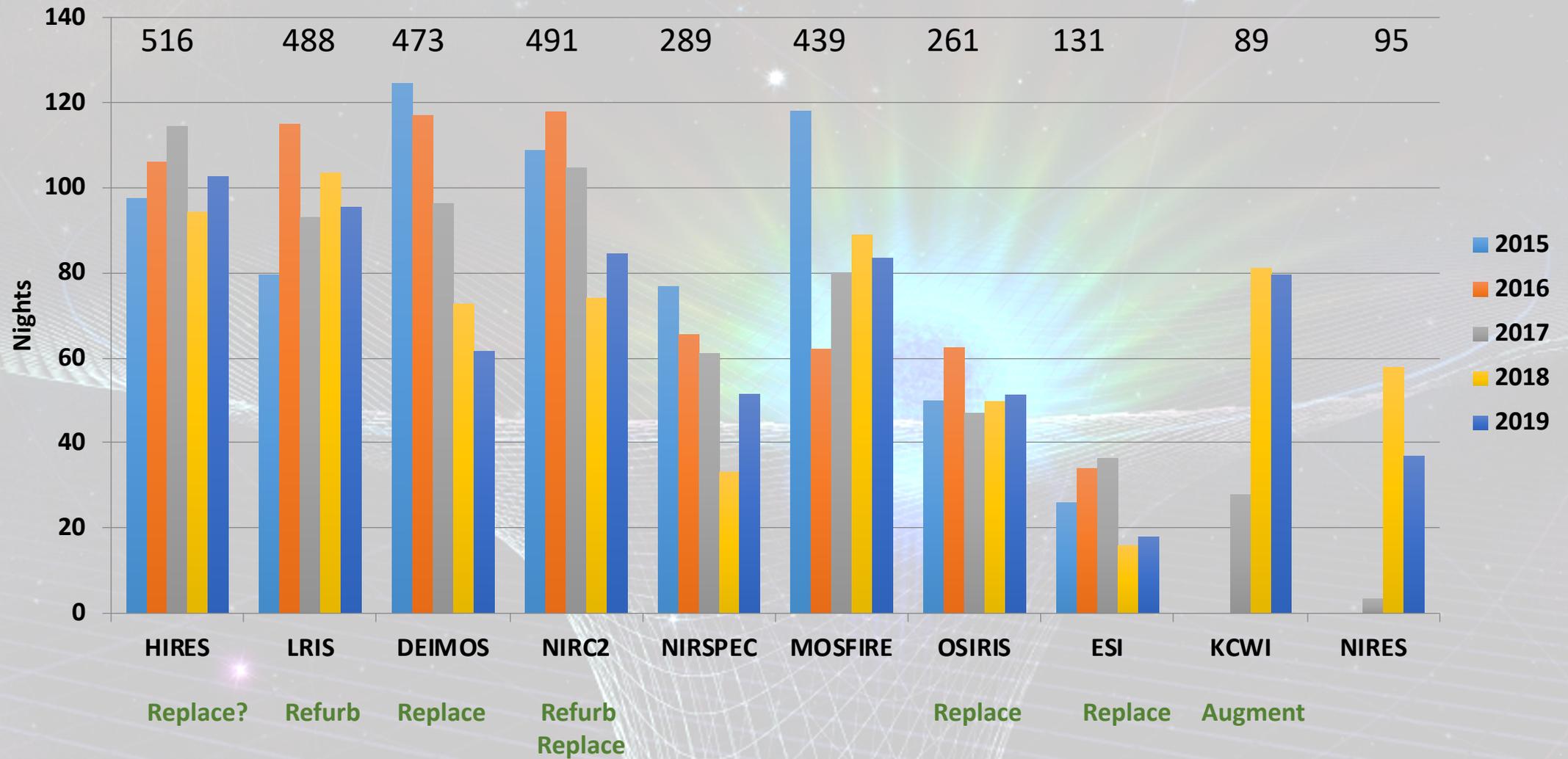
D-Cut Substrates – Rough cut & grind
Vendor: Corning



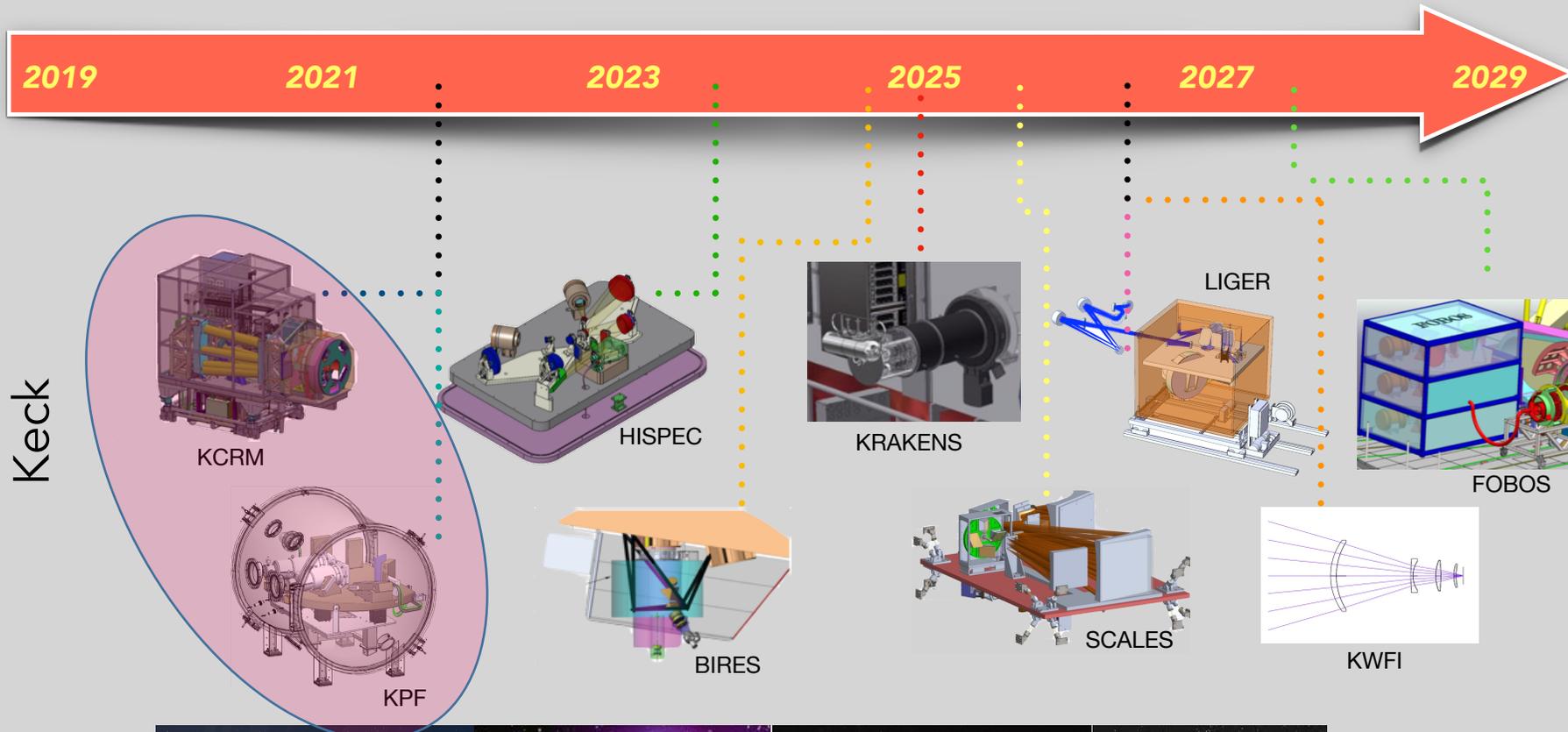
KAPA



Demand for Instruments - Previous 5 Years



Keck Instrumentation: The Next Decade





Maunakea Strategic Outlook for WMKO

- We face challenges whether TMT built in Hawaii or not.
- We are operating, albeit with restricted access and increased risks.
- There are impacts to staff, operations, budget, management.
- We are increasing our proactive efforts with government and community relations, including collaboration with other MKO's.